NBSIR 88-3758

Fire Research Publications, 1987

Nora H. Jason

U.S. DEPARTMENT OF COMMERCE
National Bureau of Standards
National Engineering Laboratory
Center for Fire Research
Gaithersburg, MD 20899

April 1988

Stimulating America's Progress
1913-1988

U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

NBSIR 88-3758

FIRE RESEARCH PUBLICATIONS, 1987

Nora H. Jason

U.S. DEPARTMENT OF COMMERCE
National Bureau of Standards
National Engineering Laboratory
Center for Fire Research
Gaithersburg, MD 20899

April 1988

U.S. DEPARTMENT OF COMMERCE, C. William Verity, *Secretary*
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director*

TABLE OF CONTENTS

	Page
ABSTRACT	v
AUTHOR/CITATION ENTRIES	1
REPORT NUMBER INDEX	63

ABSTRACT

"Fire Research Publications, 1987" is a supplement to previous editions; the last five editions are referenced below. Earlier edition information is available upon request.

1982	NBSIR 83-2706	PB83-239015
1983	NBSIR 84-2871	PB84-217066
1984	NBSIR 85-3153	PB85-208502
1985	NBSIR 86-3372	PB86-208317
1986	NBSIR 87-3555	PB88-109889

Only publications prepared by members of the Center for Fire Research (CFR), by other National Bureau of Standards (NBS) personnel for CFR, or by external laboratories under contract or grant from the CFR are cited.

NBS Report Series are available for purchase from either the Government Printing Office (GPO) or the National Technical Information Service (NTIS).

GPO documents, e.g., the NBS Technical Note series, are obtained by writing directly to the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402. Orders must be payable to the "Superintendnet of Documents, U. S. Government Printing Office".

NTIS documents, i.e., the NBSIR and NBS-GCR series, are obtained by writing directly to the National Technical Information Service, Springfield, VA 22161. Microfiche copies of the documents also are available at a cost of $5.95 for domestic orders. Orders must be prepaid by check or money order payable to "National Technical Information Service" or by utilizing your NTIS deposit account.

Reports available from the Consumer Product Safety Commission may be obtained by writing directly to them at 5401 Westbard Avenue, Bethesda, MD 20810.

AUTHOR/CITATION ENTRIES

Alarie, Y.

Malek, D. E., Stock, M. F. and Alarie, Y.
Performance Evaluation Under Intoxicating Atmospheres.
Pittsburgh Univ., PA
Fundamental and Applied Toxicology, Vol. 8, 335-345, 1987.

Kennah, H. E., II, Stock, M. F. and Alarie, Y.
Toxicity of Thermal Decomposition Products From Composites.
Pittsburgh Univ., PA
Journal of Fire Sciences, Vol. 5, No. 1, 3-16, January/February 1987.

Ang, J. A.

Ang, J. A.
Perturbed Boundary Layer Diffusion Flames.
California Univ., Berkeley
NBS-GCR-87-526, 137 P. March 1987.
Available from the National Technical Information Service
PB87-179222

Atreya, A.

Atreya, A. and Emmons, H. W.
Wood Ignition and Pyrolysis.
Michigan State Univ., East Lansing
Harvard Univ., Cambridge, MA
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 1987.

Atreya, A. and Wichman, I. S.
Heat and Mass Transfer During Piloted Ignition of Cellulosic Solids.
Michigan State Univ., East Lansing
American Society of Mechanical Engineers and Japan Society of Mechanical Engineers. Proceedings of the 1987 ASME-JSME Thermal Engineering Joint Conference. Volume 1. March 22-27, 1987, Honolulu, HI. American Society of Mechanical Engineers, New York, Marto, P. J. and Tanasawa, I., Editors, 433-440 pp, 1987.

Kashiwagi, T., Ohlemiller, T. J. and Atreya, A.
Effects of External Radiant Flux and Ambient Oxygen Concentration on Gasification Rates and Evolved Products of White Pine.
National Bureau of Standards, Gaithersburg, MD
UJNR Panel on Fire Research and Safety. 8th Joint Panel Meeting. May 13-21, 1985, Tsukuba, Japan, 1987.

Wichman, I. S. and Atreya, A.
Simplified Model for the Pyrolysis of Charring Materials.
National Bureau of Standards, Gaithersburg, MD
Michigan State Univ., East Lansing
Combustion and Flame, Vol. 68, No. 3, 231-247, June 1987.

Aung, W.

Finlayson, E. U., Aung, W. and Kashiwagi, T.
Theoretical Models for Combined Radiation-Conduction in Polymeric Solids Heated by External Radiative Flux.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
American Society of Mechanical Engineers and Japan Society of Mechanical Engineers. Proceedings of the 1987 ASME-JSME Thermal Engineering Joint Conference. Volume 1. March 22-27, 1987, Honolulu, HI. American Society of Mechanical Engineers, New York, Marto, P. J. and Tanasawa, I., Editors, 427-432 pp, 1987.

Babrauskas, V.

Babrauskas, V.
Fire-Related Standards and Testing.
National Bureau of Standards, Gaithersburg, MD
National Aeronautics and Space Administration. Spacecraft Fire Safety. Publication 2476. August 20-21, 1986, Cleveland, OH. Proceedings of a Workshop, Nasa CP 2476, 31-41 pp, 1987.

Babrauskas, V.
On the Rate of Heat Release in the Cone Calorimeter. Letter to the Editor.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 4, 205, December 1987.

Babrauskas, V., Levin, B. C. and Gann, R. G.
New Approach to Fire Toxicity Data for Hazard Evaluation.
National Bureau of Standards, Gaithersburg, MD
ASTM Standardization News, Vol. 14, No. 9, 28-33, September 1986 and Fire Journal, Vol. 81, No. 2, 22-23+, March/April 1987.

Babrauskas, V. and Mulholland, G.
Smoke and Soot Data Determinations in the Cone Calorimeter.
National Bureau of Standards, Gaithersburg, MD
American Society for Testing and Materials. Mathematical Modeling of Fires. December 3, 1986, New Orleans, LA.
Am. Soc. for Testing and Materials, PA, ASTM STP 983, Mehaffey, J. R., Editor, 83-104 pp, 1987.

Babrauskas, V. and Parker, W. J.
Ignitability Measurements With the Cone Calorimeter.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 1, 31-43, March 1987.
NBSIR 86-3445, 49 P. September 1986.
Available from National Technical Information Services PB87-123196

Mulholland, G. W., Henzel, V. and Babrauskas, V.
Effect of Radiant Flux on Smoke Emission.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA.

Nyden, M. R. and Babrauskas, V.
Use of FTIR Spectroscopy for Multi-Component Quantitation in Combustion Toxicology.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern States Section and National Bureau of Standards. 1987 Combined Technical Meetings. CFR Annual Conference on Fire Research. 1987. 107/1-4 pp, 1987.

Baier, L.

Gurman, J. L., Baier, L. and Levin, B. C.
Polystyrenes: A Review of the Literature on the Products of Thermal Decomposition and Toxicity.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 3, 109-130, September 1987.
NBSIR 85-3277, 86 P. March 1986.
Available from National Technical Information Services PB86-182284

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Different Time Exposures to the Fire Gases: Carbon Monoxide or Hydrogen Cyanide or to Carbon Monoxide Combined With Hydrogen Cyanide or Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA.

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Pure and Mixed Fire Gases for Various Exposure Times. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 803, February 1987.

Baum, H. R.

Baum, H. R.
Analysis of the Pressure Rise in Sealed Magazine Fires.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3557, 28 P. November 1987.
Available from National Technical Information Services PB88-155759

Baum, H. R. and Rehm, R.G.
Transient Combustion in a Turbulent Fire.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 1-12 pp, 1987.

Choi, M., Baum, H. R. and Greif, R.
Heat Transfer Problem for the Modified Chemical Vapor Deposition Process.
Berkeley Univ., CA
National Bureau of Standards, Gaithersburg, MD
Journal of Heat Transfer, Vol. 109, No. 3, 642-646, August 1987.

Evans, D. D., Baum, H. R., McCaffrey, B. J., Mulholland, G.W., Harkleroad, M. F. and Manders, W. F.
Combustion of Oil on Water.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3420, 55 P. November 1987.
Available from National Technical Information Services

Rehm, R. G., Baum, H. R. and Lozier, D. W.
Diffusion-Controlled Reaction in a Vortex Field.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3572, 40 P. June 1987.
Available from National Technical Information Services

Steckler, K. D., Baum, H.R. and Quintiere, J. G.
Salt Water Modeling of Fire Induced Flows in Multicompartment Enclosures.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute Symposium (International) on Combustion, 21st. August 3-8, 1986, Munich, West Germany, 1987.
NBSIR 86-3327 and CIB W14/88/13 (USA), 52 P. March 1986.
Available from National Technical Information Services
PB86-196417

Braun, E.
Braun, E.
Self Heating Properties of Coal.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3554, 108 P. August 1987.
Available from National Technical Information Services
PB88-109871

Braun, E. and Levin, B.C.
Nylons: A Review of the Literature on Products of Combustion and Toxicity.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 2, 71-88, June 1987.
NBSIR 85-3280, 88 P. February 1986.
Available from National Technical Information Services PB86-189883

Braun, E. and Levin, B. C.
Polyesters: A Review of the Literature on Products of Combustion and Toxicity.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 10, No. 3-4, 107-124, September-December 1986.
NBSIR 85-3139, 71 P. June 1985.
Available from National Technical Information Services PB85-246080

Braun, E., Levin, B. C., Paabo, M., Gurman, J. L. Holt, T. and Steel, J. S.
Comparison of Toxic Smoke From Large-Scale Room Burns and Small-Scale Laboratory Experiments. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 804, February 1987.

Braun, E., Levin, B. C., Paabo, M., Gurman, J., Holt, T. and Steel, J. S.
Fire Toxicity Scaling.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3510, 196 P. February 1987.
Available from National Technical Information Services PB87-172276

Levin, B. C., Paabo, M., Gurman, J. L., Harris, S. E. and Braun, E.
Toxicological Interactions Between Carbon Monoxide and Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
Toxicology, Vol. 47, 135-164, 1987.
Air Force Aerospace Medical Research Laboratory. 16th Conference of Toxicology. Paper No. 15. October 29-30, 1986, Dayton, OH, 1-30 pp, 1987.

Brosmer, M. A.
Brosmer, M. A. and Tien, C. L.
Radiative Energy Blockage in Large Pool Fires.
California Univ., Berkeley
Combustion Science and Technology, Vol. 51, No. 1-3, 21-37, 1987.

Brown, J. P.
Sumner, D. A., Greenberg, D., Lago, A. M., Shannon, J. A., Oster, G., Ford, G. T., Brown, J. P. and Calfee, J. E.
Economic Sector Data for Modeling the Impact of Less Ignition-Prone Cigarettes. Volume 6.
North Carolina State Univ., Raleigh
National Center for Food and Agricultural Policy Resources for the Future
Technical Study Group Cigarette Safety Act of 1984
154 P. October 1987.
Available from Consumer Product Safety Commission

Bryan, J. L.
Milke, J. A. and Bryan, J. L.
Development of Cost Effective Techniques for Alleviating Water Supply Deficiencies in a Residential Sprinkler System.
Maryland Univ., College Park
NBS-GCR-87-533, 75 P. November 1987.
Available from National Technical Information Services
PB88-155825

Bukowski, R. W.
Bukowski, R. W.
Hazard Analysis Using Toxic Potency and Other Material Property Data. (Abstract Only).
National Bureau of Standards, Gaithersburg, MD
U.S. Army Communications-Electronics Command. International Wire and Cable Symposium, 36th. November 17-19, 1987, Arlington, VA, 1987.

Bukowski, R. W.
Techniques for Fire Detection.
National Bureau of Standards, Gaithersburg, MD
National Aeronautics and Space Administration. Spacecraft Fire Safety. August 20-21, 1986, Cleveland, OH.
Proceedings of a Workshop, NASA CP 2476, 9-29 pp, 1987.

Calfee, J. E.
Sumner, D. A., Greenberg, D., Lago, A. M., Shannon, J. A., Oster, G., Ford, G. T., Brown, J. P. and Calfee, J. E.
Economic Sector Data for Modeling the Impact of Less Ignition-Prone Cigarettes. Volume 6.
North Carolina State Univ., Raleigh
National Center for Food and Agricultural Policy Resources for the Future
Technical Study Group Cigarette Safety Act of 1984
154 P. October 1987.
Available from Consumer Product Safety Commission

Carey, C. M.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
45 P. October 1987.
Available from Consumer Product Safety Commission

Charles, J. L.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984.
45 P. October 1987.
Available from Consumer Product Safety Commission

Cherry, S. M.
Cherry, S. M.
Summaries of Center for Fire Research Grants and In-House Programs--1987.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3650, 188 P. October 1987.
Available from National Technical Information Services
PB88-153804

Choi, M.

Choi, M., Baum, H. R. and Greif, R.
Heat Transfer Problem for the Modified Chemical Vapor Deposition Process.
Berkeley Univ., CA
National Bureau of Standards, Gaithersburg, MD
Journal of Heat Transfer, Vol. 109, No. 3, 642-646, August 1987.

Chou, S. L.

Kulkarni, A. K., Hwang, J. J. and Chou, S. L.
Vertical Wall Fire in a Stratified Atmosphere. Part A: Experiments on Wall Fire in a Stratified Ambient Atmosphere. Part B: A Mathematical Model for a Turbulent Natural Convection Flow Over a Vertical Wall Immersed in a Stratified Atmosphere. Annual Report. August 15, 1985-August 14, 1986.
Pennsylvania State Univ., University Park
NBS-GCR-87-525, 61 P. March 1987.
Available from National Technical Information Services

Claire, B.

Damant, G. H., McCormack, J. A. and Claire, B.
Tests of Smoldering Ignition of Chairs and Reduced-Scale Mock-Ups by Various Cigarettes. Volume 7.
Bureau of Home Furnishings, North Highlands, CA
Technical Study Group Cigarette Safety Act of 1984.
79 P. October 1987.
Available from Consumer Product Safety Commission

Clark, H. M.

Levin, B. C., Gurman, J. L., Paabo, M., Clark, H. M. and Yoklavich, M. F.
Reduction of HCN and the Acute Inhalation Toxicity of Combustion Products by Copper Additives. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 568, February 1987.

Cooper, L. Y.

Cooper, L. Y.
Ceiling Jet-Driven Wall Flows in Compartment Fires.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3535, 30 P. April 1987.
Available from National Technical Information Services
PB87-201786

Cooper, L. Y.
Heat Transfer in Compartment Fires Near Regions of Ceiling Jet-Wall Impingement.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern States Section. Chemical and Physical Processes in Combustion. Fall Technical Meeting, 1985. November 4-6, 1985.
24th National Heat Transfer Conference in Sessions on Heat and Mass Transfer in Fire. ASME HTD-Vol. 73, 57-62, August 9-12, 1987.

Cooper, L. Y. and Forney, G. P.
Fire in a Room With a Hole: A Prototype Application of the Consolidated Compartment Fire Model (CCFM) Computer Code.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 5 P. 1987.

Cooper, L. Y. and Stroup, D. W.
Test Results and Predictions for the Response of Near-Ceiling Sprinkler Links in a Full-Scale Compartment Fire.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3633, 45 P. September 1987.
Available from National Technical Information Services
PB88-113741

Cooper, L. Y. and Stroup, D. W.
Thermal Response of Unconfined Ceilings Above Growing Fires and the Importance of Convective Heat Transfer.
National Bureau of Standards, Gaithersburg, MD
Journal of Heat Transfer, Vol. 109, No. 1, 172-178, February 1987.
NBSIR 84-2856, 36 P. April 1984.
Available from National Technical Information Services
PB84-216548

Cooper, L. Y., Rockett, J. A., Mitler, H. E. and Stroup, D. W.
Program for the Development of a Benchmark Compartment Fire Model Computer Code.
National Bureau of Standards, Gaithersburg, MD
American Society for Testing and Materials. Mathematical Modeling of Fires. December 3, 1986, New Orleans, LA.
ASTM, Philadelphia, PA. Proceedings, ASTM STP 983, Mehaffey, J. R., Editor, 116-127 pp, 1987.
NBSIR 85-3252, 29 P. October 1985.
Available from National Technical Information Services PB86-166592

Forney, G. P. and Cooper, L. Y.
Plan for the Development of the Generic Framework and Associated Computer Software for a Consolidated Compartment Fire Model Computer Code.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3500, 25 P. January 1987.
Available from National Technical Information Services PB87-165569

Kennedy, L. A. and Cooper, L. Y.
Before the Smoke Clears Heat and Mass Transfer in Fires and Controlled Combustion.
Ohio State Univ., Columbus
National Bureau of Standards, Gaithersburg, MD
Mechanical Engineering, Vol. 109, No. 4, 62-67, April 1987.

Motevalli, V., Marks, C. H., McCaffrey, B. J. and Cooper, L. Y.
Transient Ceiling Jet Characteristics.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 5 P. 1987.

Rockett, J. A., Morita, M. and Cooper, L. Y.
Comparisons of NBS/Harvard VI Simulations and Full-Scale, Multi-Room Fire Test Data.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3567, 66 P. July 1987.
Available from National Technical Information Services

Woodhouse, A., Marks, C. H. and Cooper, L. Y.
Experimental Study of the Transient Thermal Response of Unconfined Ceilings Above Fire Plumes.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern States Section. Chemical and Physical Processes in Combustion. Fall Technical Meeting, 1985. Philadelphia, PA. 41/1-4 pp. November 4-6, 1985.
ASME-JSME Thermal Engineering Conference, March 22, 27, 1987, Honolulu, HI. Proceedings of Sessions on Heat and Mass Transfer in Compartment Fires. Organized and Edited by Cooper, L. Y. and Farouk, B., 387-394 pp, 1987.

Cullen, J. W.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984.
45 P. October 1987.
Available from Consumer Product Safety Commission

Damant, G. H.
Damant, G. H., McCormack, J. A. and Claire, B.
Tests of Smoldering Ignition of Chairs and Reduced-Scale Mock-Ups by Various Cigarettes. Volume 7.
Bureau of Home Furnishings, North Highlands, CA
Technical Study Group Cigarette Safety Act of 1984
79 P. October 1987.
Available from Consumer Product Safety Commission

Davis, W. D.
Mitler, H. E. and Davis, W. D.
Computer Model of a Smoldering Cigarette.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 4 P. 1987.

Delichatsios, M. A.
Delichatsios, M. A.
Model for the Outflow of Fire Gases From a Long Corridor Closed at One End.
Factory Mutual Research Corp., Norwood, MA
American Society of Mechanical Engineers and Japan Society of Mechanical Engineers. Proceedings of the 1987 ASME-JSME Thermal Engineering Joint Conference. Volume 1. March 22-27, 1987, Honolulu, HI. American Society of Mechanical Engineers, New York, Marto, P. J. and Tanasawa, I., Editors, 403-407 pp, 1987.

di Marzo, M.
di Marzo, M. and Evans, D. D.
Dropwise Evaporative Cooling of High Thermal Conductivity Materials.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Heat and Technology, Vol. 5, No. 1-2, 126-136, 1987.

di Marzo, M., Trehan, A. K. and Evans, D. D.
Cooling Effect of a Single Evaporating Droplet on a Hot Semi-Infinite Metal Body.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3517, 29 P. April 1987.
Available from National Technical Information Services
PB87-201802

di Marzo, M., Wang, Z. Y. and Meng, W. H.
Transient Cooling of a Hot Surface by Droplets Evaporation. Final Report.
Maryland Univ., College Park
NBS-GCR-87-534, 77 P. November 1987.
Available from National Technical Information Services
PB88-153341

Dietenberger, M.
Dietenberger, M.
Description and Results of Furniture Fire Modules Within Fast (HEMFAST).
Dayton Research Institute Univ., OH
NBS-GCR-87-527, 74 P. March 1987.
Available from National Technical Information Services
PB87-182002

Dipert, R. A.
Peacock, R. D. and Dipert, R. A.
STOVE: A Predictive Model for Heat Transfer From Solid-Fuel Appliances.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3300, 66 P. February 1987.
Available from National Technical Information Services
PB87-171492

Dubivsky, P. M.
Dubivsky, P. M.
Smoke Detectors--The UL Story.
National Bureau of Standards, Gaithersburg, MD
Lab Data, Vol. 17, No. 4, 9-19, 1987.
SFPE Bulletin, No. 87-5, 3-8, November 1987.

Ellingwood, B.
Lin, T. D., Ellingwood, B. and Piet, O.
Flexural and Shear Behavior of Reinforced Concrete Beams During Fire Tests.
Portland Cement Assoc., Skokie, IL
NBS-GCR-87-536 and CIB W14/88/4 (USA), 104 P. November 1987.
Available from National Technical Information Services
PB88-155817

Emmons, H. W.
Atreya, A. and Emmons, H. W.
Wood Ignition and Pyrolysis.
Michigan State Univ., East Lansing
Harvard Univ., Cambridge, MA
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 17 P. 1987.

Evans, D. D.
di Marzo, M. and Evans, D. D.
Dropwise Evaporative Cooling of High Thermal Conductivity Materials.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Heat and Technology, Vol. 5, No. 1-2, 126-136, 1987.

di Marzo, M., Trehan, A. K. and Evans, D. D.
Cooling Effect of a Single Evaporating Droplet on a Hot Semi-Infinite Metal Body.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3517, 29 P. April 1987.
Available from National Technical Information Services
PB87-201802

Evans, D. D., Baum, H. W., McCaffrey, B. J., Mulholland, G. W., Harkleroad, M. F. and Manders, W. F.
Combustion of Oil on Water.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3420, 55 P. November 1987.
Available from National Technical Information Services

Evans, D. D. and Morehart, J.
Investigation of the Effects of a Stratified Two Layer Environment on Fire Plume Temperatures.
National Bureau of Standards, Gaithersburg, MD
California Institute of Technology, Pasadena, CA
American Society of Mechanical Engineers and Japan Society of Mechanical Engineers. Proceedings of the 1987 ASME-JSME Thermal Engineering Joint Conference. Volume 1. March 22-27, 1987, Honolulu, HI. American Society of Mechanical Engineers, New York, Marto, P. J. and Tanasawa, I., Editors, 381-386 pp, 1987.

Evans, D. D., Walton, W. D. and McCaffrey, B. J.
Progress in Modeling Sprinkler Performance.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 11 P. 1987.

Faeth, G. M.

Gore, J. P., Jeng, S. M. and Faeth, G. M.
Spectral and Total Radiation Properties of Turbulent Carbon Monoxide/Air Diffusion Flames.
Michigan Univ., Ann Arbor
AIAA Journal, Vol. 25, No. 2, 339-345, February 1987.
AIAA Aerospace Sciences Meeting, 24th. January 6-9, 1986, Reno, NV. Paper 86-0294. 1987.

Gore, J. P., Jeng, S. M. and Faeth, G. M.
Spectral and Total Radiation Properites of Turbulent Hydrogen/Air Diffusion Flames.
Michigan Univ., Ann Arbor
Journal of Heat Transfer, Vol. 109, 165-171, February 1987.

Lai, M. C. and Faeth, G. M.
Combined Laser-Doppler Anemometer/Laser-Induced Fluorescence System for Turbulent Transport Measurements.
Michigan Univ., Ann Arbor
Journal of Heat Transfer, Vol. 109, 254-256, February 1987.

Fansler, L.

Harwood, B. and Fansler, L.
Feasibility Study of Obtaining Field Data on Cigarette-Ignited Fires. Volume 8.
Consumer Product Safety Comm., Bethesda, MD
Technical Study Group Cigarette Safety Act of 1984
46 P. October 1987.
Available from Consumer Product Safety Commission

Finlayson, E. U.

Finlayson, E. U., Aung, W. and Kashiwagi, T.
Theoretical Models for Combined Radiation-Conduction in Polymeric Solids Heated by External Radiative Flux.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
American Society of Mechanical Engineers and Japan Society of Mechanical Engineers. Proceedings of the 1987 ASME-JSME Thermal Engineering Joint Conference. Volume 1. March 22-27, 1987, Honolulu, HI. American Society of Mechanical Engineers, New York, Marto, P. J. and Tanasawa, I., Editors, 427-432 pp, 1987.

Flynn, J. H.

Flynn, J. H. and Levin, D. M.
Thermal and Material Transport and the Solubility of Oxygen and Other Gases in Oxidizing Polymers.
Johns Hopkins Univ., Baltimore, MD
NBS-GCR-87-524, 27 P. March 1987.
Available National Technical Information Services

Ford, G. T.
Sumner, D. A., Greenberg, D., Lago, A. M., Shannon, J. A., Oster, G., Ford, G. T., Brown, J. P. and Calfee, J. E.
Economic Sector Data for Modeling the Impact of Less Ignition-Prone Cigarettes. Volume 6.
North Carolina State Univ., Raleigh
National Center for Food and Agricultural Policy Resources for the Future
Technical Study Group Cigarette Safety Act of 1984
154 P. October 1987.
Available from Consumer Product Safety Commission

Forney, G. P.
Cooper, L. Y. and Forney, G. P.
Fire in a Room With a Hole: A Prototype Application of the Consolidated Compartment Fire Model (CCFM) Computer Code.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 5 P. 1987.

Forney, G. P. and Cooper, L. Y.
Plan for the Development of the Generic Framework and Associated Computer Software for a Consolidated Compartment Fire Model Computer Code.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3500, 25 P. January 1987.
Available from National Technical Information Services
PB87-165569

Fowell, A. J.
Fowell, A. J.
Role of ASTM in Fire Modeling.
National Bureau of Standards, Gaithersburg, MD
ASTM Standardization News, Vol. 14, No. 9, 38-40, September 1986.
American Society for Testing and Materials. Mathematical Modeling of Fires. December 3, 1986, New Orleans, LA.
ASTM, Philadelphia, PA, ASTM STP 983, Mehaffey, J. R., Editor, 1-6 pp, 1987.

Fuller, S. K.
Ruegg, R. T., Weber, S. F., Lippiatt, B. C.
and Fuller, S. K.
Improving the Fire Safety of Cigarettes: An Economic Impact Analysis. Volume 4.
National Bureau of Standards, Gaithersburg, MD
Technical Study Group Cigarette Safety Act of 1984
97 P. October 1987.
Available from Consumer Product Safety Commission

Gann, R. G.
Babrauskas, V., Levin, B. C. and Gann, R. G.
New Approach to Fire Toxicity Data for Hazard Evaluation.
National Bureau of Standards, Gaithersburg, MD
ASTM Standardization News, Vol. 14, No. 9, 28-33, September 1986 and Fire Journal, Vol. 81, No. 2, 22-23+, March/April 1987.

Gann, R. G.
Progress Report on Fire Toxicity and Chemistry Research in the United States.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 3 P. 1987.

Gann, R. G., Harris, R. H., Jr., Krasny, J. F., Levine, R. S., Mitler, H. E. and Ohlemiller, T. J.
Effect of Cigarette Characteristics on the Ignition of Soft Furnishings. Volume 3. Technical Study Group Cigarette Safety Act of 1984.
National Bureau of Standards, Gaithersburg, MD
NBS TN 1241, 251 P. October 1987.
Available from Government Printing Office

Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Gentry, J. W.
Samson, R. J., Mulholland, G. W. and Gentry, J. W.
Structural Analysis of Soot Agglomerates.
National Bureau of Standards, Gaithersburg, MD
Maryland Univ., College Park
Langmuir, Vol. 3, No. 2, 272-281, 1987.
Fine Particles: High Temperature Synthesis. June 15-18, 1986, Atlanta, GA, 1987.

Gerard, J. C.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Glassman, I.
Hura, H. S. and Glassman, I.
Fuel Oxygen Effects on Soot Formation in Counterflow Diffusion Flames.
Princeton Univ., NJ
Combustion Science and Technology, Vol. 51, No. 1-3, 1-21, 1987.

Gore, J. P.
Gore, J. P., Jeng, S. M. and Faeth, G. M.
Spectral and Total Radiation Properties of Turbulent Carbon Monoxide/Air Diffusion Flames.
Michigan Univ., Ann Arbor
AIAA Journal, Vol. 25, No. 2, 339-345, February 1987.
AIAA Aerospace Sciences Meeting, 24th. January 6-9, 1986, Reno, NV. Paper 86-0294. 1987.

Gore, J. P., Jeng, S. M. and Faeth, G. M.
Spectral and Total Radiation Properites of Turbulent Hydrogen/Air Diffusion Flames.
Michigan Univ., Ann Arbor
Journal of Heat Transfer, Vol. 109, 165-171, February 1987.

Grand, A. F.
Hartzell, G. E., Grand, A. F., Kaplan, H. L., Stacy, H. W. and Switzer, W. G.
Analysis of Hazards to Life Safety in Fires: A Comprehensive Multi-Dimensional Research Program. Year 2. Final Report.
Southwest Research Inst., San Antonio, TX
SWRI Project 01-1257, 38 P. March 1987.

Hartzell, G. E., Grand, A. F. and Switzer, W. G.
Studies on the Toxicity of Smoke Containing Hydrogen Chloride.
Southwest Research Inst., San Antonio, TX
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 10 P. 1987.

Greenberg, D.
Sumner, D. A., Greenberg, D., Lago, A. M., Shannon, J. A., Oster, G., Ford, G. T., Brown, J. P. and Calfee, J. E.
Economic Sector Data for Modeling the Impact of Less Ignition-Prone Cigarettes. Volume 6.
North Carolina State Univ., Raleigh
National Center for Food and Agricultural Policy Resources for the Future
Technical Study Group Cigarette Safety Act of 1984
154 P. October 1987.
Available from Consumer Product Safety Commission

Greif, R.
Choi, M., Baum, H. R. and Greif, R.
Heat Transfer Problem for the Modified Chemical Vapor Deposition Process.
Berkeley Univ., CA
National Bureau of Standards, Gaithersburg, MD
Journal of Heat Transfer, Vol. 109, No. 3, 642-646, August 1987.

Gurman, J. L.

Braun, E., Levin, B. C., Paabo, M., Gurman, J. L. Holt, T. and Steel, J. S.
Comparison of Toxic Smoke From Large-Scale Room Burns and Small-Scale Laboratory Experiments. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 804, February 1987.

Braun, E., Levin, B. C., Paabo, M., Gurman, J., Holt, T. and Steel, J. S.
Fire Toxicity Scaling.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3510, 196 P. February 1987.
Available from National Technical Information Services
PB87-172276

Gurman, J. L., Baier, L. and Levin, B. C.
Polystyrenes: A Review of the Literature on the Products of Thermal Decomposition and Toxicity.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 3, 109-130, September 1987.
NBSIR 85-3277, 86 P. March 1986.
Available from National Technical Information Services
PB86-182284

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Different Time Exposures to the Fire Gases: Carbon Monoxide or Hydrogen Cyanide or to Carbon Monoxide Combined With Hydrogen Cyanide or Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 16 P. 1987.

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Pure and Mixed Fire Gases for Various Exposure Times. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 803, February 1987.

Levin, B. C., Gurman, J. L., Paabo, M., Clark, H. M. and Yoklavich, M. F.
Reduction of HCN and the Acute Inhalation Toxicity of Combustion Products by Copper Additives. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 568, February 1987.

Levin, B. C., Paabo, M., Gurman, J. L. and Harris, S. E.
Effects of Exposure to Single or Multiple Combinations of the Predominant Toxic Gases and Low Oxygen Atmospheres Produced in Fires.
National Bureau of Standards, Gaithersburg, MD
American Iron and Steel Inst., Washington, DC
Pittsburgh School of Public Health Univ., PA
Fundamental and Applied Toxicology, Vol. 9, No. 2, 236-250, August 1987.

Levin, B. C., Paabo, M., Gurman, J. L., Harris, S. E. and Braun, E.
Toxicological Interactions Between Carbon Monoxide and Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
Toxicology, Vol. 47, 135-164, 1987.
Air Force Aerospace Medical Research Laboratory. 16th Conference of Toxicology. October 29-30, 1986, Dayton, OH, Paper No, 15, 1-30 pp, 1987.

Hall, J. R., Jr.
Hall, J. R., Jr.
Expected Changes in Fire Damages From Reducing Cigarette Ignition Propensity. Volume 5.
National Fire Protection Assoc., Quincy, MA
Technical Study Group Cigarette Safety Act of 1984
103 P. October 1987.
Available from Consumer Product Safety Commission

Harkleroad, M. F.
Evans, D. D., Baum, H. W., McCaffrey, B. J., Mulholland, G. W., Harkleroad, M. F. and Manders, W. F.
Combustion of Oil on Water.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3420, 55 P. November 1987.
Available from National Technical Information Services

Harris, R. H., Jr.
Gann, R. G., Harris, R. H., Jr., Krasny, J. F., Levine, R. S., Mitler, H. E. and Ohlemiller, T. J.
Effect of Cigarette Characteristics on the Ignition of Soft Furnishings. Volume 3. Technical Study Group Cigarette Safety Act of 1984.
Technical Study Group Cigarette Safety Act
National Bureau of Standards, Gaithersburg, MD
NBS TN 1241, 251 P. October 1987.
Available from Government Printing Office

Harris, S. E.
Levin, B. C., Paabo, M., Gurman, J. L. and Harris, S. E.
Effects of Exposure to Single or Multiple Combinations of the Predominant Toxic Gases and Low Oxygen Atmospheres Produced in Fires.
National Bureau of Standards, Gaithersburg, MD
American Iron and Steel Inst., Washington, DC
Pittsburgh School of Public Health Univ., PA
Fundamental and Applied Toxicology, Vol. 9, No. 2, 236-250, August 1987.

Levin, B. C., Paabo, M., Gurman, J. L., Harris, S. E. and Braun, E.
Toxicological Interactions Between Carbon Monoxide and Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
Toxicology, Vol. 47, 135-164, 1987.
Air Force Aerospace Medical Research Laboratory. 16th Conference of Toxicology. October 29-30, 1986, Dayton, OH, Paper No, 15, 30 P. 1987.

Hartzell, G. E.
Hartzell, G. E., Grand, A. F., Kaplan, H. L., Stacy, H. W. and Switzer, W. G.
Analysis of Hazards to Life Safety in Fires: A Comprehensive Multi-Dimensional Research Program. Year 2. Final Report.
Southwest Research Inst., San Antonio, TX
SWRI Project 01-1257, 38 P. March 1987.

Hartzell, G. E., Grand, A. F. and Switzer, W. G.
Studies on the Toxicity of Smoke Containing Hydrogen Chloride.
Southwest Research Inst., San Antonio, TX
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 10 P. 1987.

Harwood, B.
Harwood, B. and Fansler, L.
Feasibility Study of Obtaining Field Data on Cigarette-Ignited Fires. Volume 8.
Consumer Product Safety Comm., Washington, DC
Technical Study Group Cigarette Safety Act of 1984
46 P. October 1987.
Available from Consumer Product Safety Commission

Henzel, V.
Mulholland, G. W., Henzel, V. and Babrauskas, V.
Effect of Radiant Flux on Smoke Emission.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 11 P. 1987.

Hoebel, J. F.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Holt, T.
Braun, E., Levin, B. C., Paabo, M., Gurman, J. L. Holt, T. and Steel, J. S.
Comparison of Toxic Smoke From Large-Scale Room Burns and Small-Scale Laboratory Experiments. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 804, February 1987.

Braun, E., Levin, B. C., Paabo, M., Gurman, J., Holt, T. and Steel, J. S.
Fire Toxicity Scaling.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3510, 196 P. February 1987.
Available from National Technical Information Services
PB87-172276

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Different Time Exposures to the Fire Gases: Carbon Monoxide or Hydrogen Cyanide or to Carbon Monoxide Combined With Hydrogen Cyanide or Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 16 P. 1987.

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Pure and Mixed Fire Gases for Various Exposure Times. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 803, February 1987.

Horvath, J. J.
Santoro, R. J., Yeh, T. T., Horvath, J. J. and Semerjian, H. G.
Transport and Growth of Soot Particles in Laminar Diffusion Flames.
National Bureau of Standards, Gaithersburg, MD
Combustion Science and Technology, Vol. 51, No. 1-3, 89-115, 1987.

Huggett, C.
Huggett, C. and Levin, B. C.
Toxicity of the Pyrolysis and Combustion Products of Poly(Vinyl Chlorides): A Literature Assessment.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 3, 131-142, September 1987.
NBSIR 85-3286, 48 P. April 1986.
Available from National Technical Information Services
PB86-201621

Hura, H. S.

Hura, H. S. and Glassman, I.
Fuel Oxygen Effects on Soot Formation in Counterflow Diffusion Flames.
Princeton Univ., NJ
Combustion Science and Technology, Vol. 51, No. 1-3, 1-21, 1987.

Hurst, W. S.

Smyth, K. C., Rosasco, G. J. and Hurst, W. S.
Measurement and Rate Law Analysis of D2-Q-Branch Line Broadening Coefficients for Collisions with D2, He, Ar, H2, and CH4.
National Bureau of Standards, Gaithersburg, MD
Journal of Chemical Physics, Vol. 87, No. 2, 1001-1011, July 15, 1987.

Hwang, J. J.

Kulkarni, A. K., Hwang, J. J. and Chou, S. L.
Vertical Wall Fire in a Stratified Atmosphere. Part A: Experiments on Wall Fire in a Stratified Ambient Atmosphere. Part B: A Mathematical Model for a Turbulent Natural Convection Flow Over a Vertical Wall Immersed in a Stratified Atmosphere. Annual Report. August 15, 1985-August 14, 1986.
Pennsylvania State Univ., University Park
NBS-GCR-87-525, 61 P. March 1987.
Available from National Technical Information Services

Inaba, A.

Inaba, A. and Kashiwagi, T.
Calculation of Thermal Degradation Initiated by Random Scission, Unsteady Radical Concentration.
National Bureau of Standards, Gaithersburg, MD
European Polymer Journal, Vol. 23, No. 11, 871-881, 1987.

Ito, A.

Ito, A. and Kashiwagi, T.
Measurement Technique for Determining the Temperature Distribution in a Transparent Solid Using Holographic Interferometry.
National Bureau of Standards, Gaithersburg, MD
Applied Optics, Vol. 26, No. 5, 954-958, March 1, 1987.

Jaluria, Y.
Jaluria, Y. and Kapoor, K.
Effect of Wall Flow at the Early Stages of Fire Growth on the Mathematical Modeling of Enclosure Fires.
Rutgers Univ., New Brunswick
CIB W14/88/21 (USA)
ASME-JSME Thermal Engineering Conference. Proceedings of Sessions on Heat and Mass Transfer in Compartment Fires, March 22-27, 1987.

Jaluria, Y., and Kapoor, K.
Experimental Simulation of Penetrative Flow in a Compartment Fire.
Rutgers Univ., New Brunswick, NJ
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 89/1-4 pp, 1987.

Jason, N. H.
Jason, N. H.
Fire Research Publications, 1986.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3555, 47 P. April 1987.
Available from National Technical Information Services
PB88-109889

Jason, N. H.
FIREDOC Users Manual.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3562, 39 P. September 1987.
Available from National Technical Information Services

Jason, N. H.
FIREDOC Vocabulary List, 2nd Edition.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3545, 114 P. April 1987.
Available from National Technical Information Services
PB87-181988

Jeng, S. M.
Gore, J. P., Jeng, S. M. and Faeth, G. M.
Spectral and Total Radiation Properties of Turbulent Carbon Monoxide/Air Diffusion Flames.
Michigan Univ., Ann Arbor
AIAA Journal, Vol. 25, No. 2, 339-345, February 1987.
AIAA Aerospace Sciences Meeting, 24th. January 6-9, 1986, Reno, NV. Paper 86-0294. 1987.

Gore, J. P., Jeng, S. M. and Faeth, G. M.
Spectral and Total Radiation Properites of Turbulent Hydrogen/Air Diffusion Flames.
Michigan Univ., Ann Arbor
Journal of Heat Transfer, Vol. 109, 165-171, February 1987.

Kaplan, H. L.
Hartzell, G. E., Grand, A. F., Kaplan, H. L., Stacy, H. W. and Switzer, W. G.
Analysis of Hazards to Life Safety in Fires: A Comprehensive Multi-Dimensional Research Program. Year 2. Final Report.
Southwest Research Inst., San Antonio, TX
SWRI Project 01-1257, 38 P. March 1987.

Kapoor, K.
Jaluria, Y. and Kapoor, K.
Effect of Wall Flow at the Early Stages of Fire Growth on the Mathematical Modeling of Enclosure Fires.
Rutgers Univ., New Brunswick
CIB W14/88/21 (USA)
ASME-JSME Thermal Engineering Conference. Proceedings of Sessions on Heat and Mass Transfer in Compartment Fires, March 22-27, 1987.

Jaluria, Y., and Kapoor, K.
Experimental Simulation of Penetrative Flow in a Compartment Fire.
Rutgers Univ., New Brunswick, NJ
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 89/1-4 pp, 1987.

Kashiwagi, T.
Finlayson, E. U., Aung, W. and Kashiwagi, T.
Theoretical Models for Combined Radiation-Conduction in Polymeric Solids Heated by External Radiative Flux.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
American Society of Mechanical Engineers and Japan Society of Mechanical Engineers. Proceedings of the 1987 ASME-JSME Thermal Engineering Joint Conference. Volume 1. March 22-27, 1987, Honolulu, HI. American Society of Mechanical Engineers, New York, Marto, P. J. and Tanasawa, I., Editors, 427-432 pp, 1987.

Inaba, A. and Kashiwagi, T.
Calculation of Thermal Degradation Initiated by Random Scission, Unsteady Radical Concentration.
National Bureau of Standards, Gaithersburg, MD
European Polymers Journal, Vol. 23, No. 11, 871-881, 1987.

Ito, A. and Kashiwagi, T.
Measurement Technique for Determining the Temperature Distribution in a Transparent Solid Using Holographic Interferometry.
National Bureau of Standards, Gaithersburg, MD
Applied Optics, Vol. 26, No. 5, 954-958, March 1, 1987.

Kashiwagi, T.
Polymer Gasification and Flammability.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern States Section Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research, November 2-6, 1987, Gaithersburg, MD, 14 P. 1987.

Kashiwagi, T., Ohlemiller, T. J. and Atreya, A.
Effects of External Radiant Flux and Ambient Oxygen Concentration on Gasification Rates and Evolved Products of White Pine.
National Bureau of Standards, Gaithersburg, MD
UJNR Panel on Fire Research and Safety. 8th Joint Panel Meeting. May 13-21, 1985, Tsukuba, Japan, 1987.

Kashiwagi, T., Ohlemiller, T. J. and Werner, K.
Effects of External Radiant Flux and Ambient Oxygen Concentration on Nonflaming Gasification Rates and Evolved Products of White Pine.
National Bureau of Standards, Gaithersburg, MD
Combustion and Flame, Vol. 69, No. 3, 331-345, September 1987.

Ohlemiller, T. J., Kashiwagi, T. and Werner, K.
Wood Gasification at Fire Level Heat Fluxes.
National Bureau of Standards, Gaithersburg, MD
Combustion and Flame, Vol. 69, No. 2, 155-170, 1987.

Pitts, W. M. and Kashiwagi, T.
Mixing in Variable Density, Isothermal Turbulent Flow and Implications for Chemically Reacting Turbulent Flows.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3550, 73 P. June 1987.
Available from National Technical Information Services
PB88-110044

Pitts, W. M., McCaffrey, B. J. and Kashiwagi, T.
New Diagnostic Technique for Simultaneous, Time-Resolved Measurements of Concentration and Velocity in Simple Turbulent Flow Systems.
National Bureau of Standards, Gaithersburg, MD
Symposium on Turbulent Shear Flows, 4th. September 12-14, 1983, Karlsruhe, West Germany, 15/22-27 pp, 1987.
Available from National Technical Information Services
PB86-200375

Kennah, H. E., II
Kennah, H. E., II, Stock, M. F. and Alarie, Y.
Toxicity of Thermal Decomposition Products From Composites.
Pittsburgh Univ., PA
Journal of Fire Sciences, Vol. 5, No. 1, 3-16, January/February 1987.

Kennedy, L. A.
Kennedy, L. A. and Cooper, L. Y.
Before the Smoke Clears Heat and Mass Transfer in Fires and Controlled Combustion.
Ohio State Univ., Columbus
National Bureau of Standards, Gaithersburg, MD
Mechanical Engineering, Vol. 109, No. 4, 62-67, April 1987.

Klote, J. H.
Klote, J. H.
Computer Model of Smoke Movement by Air Conditioning Systems (SMACS).
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3657, 24 P. November 1987.
Available National Technical Information Services
PB88-159462

Klote, J. H.
Fire Safety Inspection and Testing of Air Moving Systems.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3660, 39 P. November 1987.
Available from National Technical Information Services
PB88-155809

Klote, J. H.
Overview of Smoke Control Technology.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3626, 27 P. September 1987.
Available from National Technical Information Services
PB88-1105772

Kokkala, M. A.
Kokkala, M. A. and Rinkinen, W. J.
Some Observations on the Shape of Impinging Diffusion Flames.
Technical Research Center of Finland, Espoo
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3505 and VTT Research Report 461, 24 P. January 1987.
Available from National Technical Information Services

Krasny, J. F.
Gann, R. G., Harris, R. H., Jr., Krasny, J. F., Levine, R. S., Mitler, H. E. and Ohlemiller, T. J.
Effect of Cigarette Characteristics on the Ignition of Soft Furnishings. Volume 3. Technical Study Group Cigarette Safety Act of 1984.
National Bureau of Standards, Gaithersburg, MD
Technical Study Group Cigarette Safety Act of 1984
NBS TN 1241, 251 P. October 1987.
Available from Government Printing Office

Krasny, J. F.
Cigarette Ignition of Soft Furnishings--A Literature Review With Commentary. Volume 2.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3509, 108 P. April 1987.
Available from National Technical Information Services
PB87-201869

Kubota, T.
Toner, S. J., Morehart, J., Kubota, T. and Zukoski, E. E.
Species Formation in Two-Layer Fire Plumes.
California Institute of Technology, Pasadena
Combustion Institute/Eastern Section Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 108/1-4 pp, 1987.

Toner, S. J., Zukoski, E. E. and Kubota, T.
Entrainment, Chemistry, and Structure of Fire Plumes.
California Institute of Technology, Pasadena, CA
NBS-GCR-87-528, 222 P. April 1987.
Available from National Technical Information Services
PB87-201851

Kulkarni, A. K.
Kulkarni, A. K., Hwang, J. J. and Chou, S. L.
Vertical Wall Fire in a Stratified Atmosphere. Part A: Experiments on Wall Fire in a Stratified Ambient Atmosphere. Part B: A Mathematical Model for a Turbulent Natural Convection Flow Over a Vertical Wall Immersed in a Stratified Atmosphere. Annual Report. August 15, 1985-August 14, 1986.
Pennsylvania State Univ., University Park
NBS-GCR-87-525, 61 P. March 1987.
Available from National Technical Information Services

Lago, A. M.
Sumner, D. A., Greenberg, D., Lago, A. M., Shannon, J. A., Oster, G., Ford, G. T., Brown, J. P. and Calfee, J. E.
Economic Sector Data for Modeling the Impact of Less Ignition-Prone Cigarettes. Volume 6.
North Carolina State Univ., Raleigh
National Center for Food and Agricultural Policy Resources for the Future
Technical Study Group Cigarette Safety Act of 1984
154 P. October 1987.
Available from Consumer Product Safety Commission

Lai, M. C.
Lai, M. C. and Faeth, G. M.
Combined Laser-Doppler Anemometer/Laser-Induced Fluorescence System for Turbulent Transport Measurements.
Michigan Univ., Ann Arbor
Journal of Heat Transfer, Vol. 109, 254-256, February 1987.

Leake, P. H.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Levin, B. C.
Babrauskas, V., Levin, B. C. and Gann, R. G.
New Approach to Fire Toxicity Data for Hazard Evaluation.
National Bureau of Standards, Gaithersburg, MD
ASTM Standardization News, Vol. 14, No. 9, 28-33, September 1986 and Fire Journal, Vol. 81, No. 2, 22-23+, March/April 1987.

Braun, E. and Levin, B.C.
Nylons: A Review of the Literature on Products of Combustion and Toxicity.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 2, 71-88, June 1987.
NBSIR 85-3280, 88 P. February 1986.
Available from National Technical Information Services
PB86-189883

Braun, E. and Levin, B. C.
Polyesters: A Review of the Literature on Products of Combustion and Toxicity.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 10, No. 3-4, 107-124, September-December 1986.
NBSIR 85-3139, 71 P. June 1985.
Available from National Technical Information Services
PB85-246080

Braun, E., Levin, B. C., Paabo, M., Gurman, J. L., Holt, T. and Steel, J. S.
Comparison of Toxic Smoke From Large-Scale Room Burns and Small-Scale Laboratory Experiments. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 804, February 1987.

Braun, E., Levin, B. C., Paabo, M., Gurman, J. L., Holt, T. and Steel, J. S.
Fire Toxicity Scaling.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3510, 196 P. February 1987.
Available from National Technical Information Services
PB87-172276

Gurman, J. L., Baier, L. and Levin, B. C.
Polystyrenes: A Review of the Literature on the Products of Thermal Decomposition and Toxicity.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 3, 109-130, September 1987.
NBSIR 85-3277, 86 P. March 1986.
Available from National Technical Information Services
PB86-182284

Huggett, C. and Levin, B. C.
Toxicity of the Pyrolysis and Combustion Products of Poly(Vinyl Chlorides): A Literature Assessment.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 3, 131-142, September 1987.
NBSIR 85-3286, 48 P. April 1986.
Available from National Technical Information Services PB86-201621

Levin, B. C.
Summary of the NBS Literature Reviews on the Chemical Nature and Toxicity of the Pyrolysis and Combustion Products From Seven Plastics: Acrylonitrile-Butadiene-Styrenes (ABS), Nylons, Polyesters, Polyethylenes, Polystyrenes, Poly(Vinyl Chlorides) and Rigid Polyurethane Foams.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 3, 143-157, September 1987.
NBSIR 85-3267, 36 P. June 1986.
Available from National Technical Information Services PB86-230679

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Different Time Exposures to the Fire Gases: Carbon Monoxide or Hydrogen Cyanide or to Carbon Monoxide Combined With Hydrogen Cyanide or Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 16 P. 1987.

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Pure and Mixed Fire Gases for Various Exposure Times. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 803, February 1987.

Levin, B. C., Gurman, J. L., Paabo, M., Clark, H. M. and Yoklavich, M. F.
Reduction of HCN and the Acute Inhalation Toxicity of Combustion Products by Copper Additives. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 568, February 1987.

Levin, B. C., Paabo, M., Gurman, J. L. and Harris, S. E.
Effects of Exposure to Single or Multiple Combinations of the Predominant Toxic Gases and Low Oxygen Atmospheres Produced in Fires.
National Bureau of Standards, Gaithersburg, MD
American Iron and Steel Inst., Washington, DC
Pittsburgh School of Public Health Univ., PA
Fundamental and Applied Toxicology, Vol. 9, No. 2, 236-250, August 1987.

Levin, B. C., Paabo, M., Gurman, J. L., Harris, S. E. and Braun, E.
Toxicological Interactions Between Carbon Monoxide and Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
Toxicology, Vol. 47, 135-164, 1987.
Air Force Aerospace Medical Research Laboratory. 16th Conference of Toxicology. October 29-30, 1986, Dayton, OH. Paper No. 15, 1987.

Paabo, M. and Levin, B. C.
Literature Review of the Chemical Nature and Toxicity of the Decomposition Products of Polyethylenes.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 2, 55-70, June 1987.
NBSIR 85-3268, 68 P. January 1986.
Available from National Technical Information Services PB86-163409

Paabo, M. and Levin, B. C.
Review of the Literature on the Gaseous Products and Toxicity Generated From the Pyrolysis and Combustion of Rigid Polyurethane Foams.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 1, 1-29, March 1987.
NBSIR 85-3224, 113 P. December 1985.
Available from National Technical Information Services PB86-151941

Rutkowski, J. B. and Levin, B. C.
Acrylonitrile-Butadiene-Styrene Copolymers (ABS): Pyrolysis and Combustion Products and Their Toxicity--A Review of the Literature.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 10, No. 3-4, 93-105, September-December 1986.
NBSIR 85-3248, 59 P. December 1985.
Available from National Technical Information Services
PB86-153772

Levin, B. M.
Levin, B. M.
EXITT--A Simulation Model of Occupant Decisions and Actions in Residential Fires.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 11 P. 1987.

Levin, B. M.
EXITT--A Simulation Model of Occupant Decisions and Actions in Residential Fires: Users Guide and Program Description.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3591 and CIB W14/88/17 (USA), 80 P. July 1987.
Available from National Technical Information Services
PB88-156088

Levin, D. M.
Flynn, J. H. and Levin, D. M.
Thermal and Material Transport and the Solubility of Oxygen and Other Gases in Oxidizing Polymers.
Johns Hopkins Univ., Baltimore, MD
NBS-GCR-87-524, 27 P. March 1987.
Available from National Technical Information Services

Levine, R. S.
Gann, R. G., Harris, R. H., Jr., Krasny, J. F., Levine, R. S., Mitler, H. E. and Ohlemiller, T. J.
Effect of Cigarette Characteristics on the Ignition of Soft Furnishings. Volume 3. Technical Study Group Cigarette Safety Act of 1984.
Technical Study Group Cigarette Safety Act of 1984
National Bureau of Standards, Gaithersburg, MD
NBS TN 1241, 251 P. October 1987.
Available from Government Printing Office

Lin, T. D.
Lin, T. D., Ellingwood, B. and Piet, O.
Flexural and Shear Behavior of Reinforced Concrete Beams During Fire Tests.
Portland Cement Assoc., Skokie, IL
NBS-GCR-87-536 and CIB W14/88/4 (USA), 104 P. November 1987.
Available from National Technical Information Services
PB88-155817

Lippiatt, B. C.
Ruegg, R. T., Weber, S. F., Lippiatt, B. C. and Fuller, S. K.
Improving the Fire Safety of Cigarettes: An Economic Impact Analysis. Volume 4.
National Bureau of Standards, Gaithersburg, MD
Technical Study Group Cigarette Safety Act of 1984
97 P. October 1987.
Available from Consumer Product Safety Commission

Lozier, D. W.
Rehm, R. G., Baum, H. R. and Lozier, D. W.
Diffusion-Controlled Reaction in a Vortex Field.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3572, 40 P. June 1987.
Available from National Technical Information Services

Malek, D. E.
Malek, D. E., Stock, M. F. and Alarie, Y.
Performance Evaluation Under Intoxicating Atmospheres.
Pittsburgh Univ., PA
Fundamental and Applied Toxicology, Vol. 8, 335-345, 1987.

Manders, W. F.
Evans, D. D., Baum, H. W., McCaffrey, B. J., Mulholland, G. W., Harkleroad, M. F. and Manders, W. F.
Combustion of Oil on Water.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3420, 55 P. November 1987.
Available from National Technical Information Services

Marks, C. H.
Marks, C. H. and Motevalli, V.
Transient Characteristics of Unconfined Fire-Plume-Driven Ceiling Jets. Annual Report. 1985-1986.
Maryland Univ., College Park
NBS-GCR-87-529, 114 P. April 1987.
Available from National Technical Information Services
PB87-201810

Motevalli, V., Marks, C. H. and McCaffrey, B. J.
Measurement of Velocity and Temperature Profiles in Low-Speed, Turbulent Non-Isothermal Flows.
Maryland Univ., College Park
Maryland Univ., Catonsville
NBS-GCR-87-535, 21 P. November 1987.
Available from National Technical Information Services
PB88-155833

Motevalli, V., Marks, C. H., McCaffrey, B. J. and Cooper, L. Y.
Transient Ceiling Jet Characteristics.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern Section Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 5 P. 1987.

Woodhouse, A., Marks, C. H. and Cooper, L. Y.
Experimental Study of the Transient Thermal Response of Unconfined Ceilings Above Fire Plumes.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern States Section. Chemical and Physical Processes in Combustion. Fall Technical Meeting, 1985. Philadelphia, PA. November 4-6, 1985, 41/1-4 pp, and ASME-JSME Thermal Engineering Conference, Honolulu, HI, March 22-27, 1987. Proceedings of Sessions on Heat and Mass Transfer in Compartment Fires. Organized and Edited by Cooper, L. Y. and Farouk, B., 387-394 pp, 1987.

Markstein, G. H.
Markstein, G. H.
Correlations for Smoke Points and Radiant Emission of Laminar Hydrocarbon Diffusion Flames.
Factory Mutual Research Corp., Norwood, MA
FMRC J.I. No. 0N0J3.BU and RC87-BT-2, 23 P. December 1987.

McCaffrey, B. J.
Evans, D. D., Baum, H. W., McCaffrey, B. J., Mulholland, G. W., Harkleroad, M. F. and Manders, W. F.
Combustion of Oil on Water.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3420, 55 P. November 1987.
Available from National Technical Information Services

Evans, D. D. and Walton, W. D. and McCaffrey, B. J.
Progress in Modeling Sprinkler Performance.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 11 P. 1987.

Motevalli, V., Marks, C. H. and McCaffrey, B. J.
Measurement of Velocity and Temperature Profiles in Low-Speed, Turbulent Non-Isothermal Flows.
Maryland Univ., College Park
Maryland Univ., Catonsville
NBS-GCR-87-535, 21 P. November 1987.
Available from National Technical Information Services
PB88-155833

Motevalli, V., Marks, C. H., McCaffrey, B. J. and Cooper, L. Y.
Transient Ceiling Jet Characteristics.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 5 P. 1987.

Pitts, W. M., McCaffrey, B. J. and Kashiwagi, T.
New Diagnostic Technique for Simultaneous, Time-Resolved Measurements of Concentration and Velocity in Simple Turbulent Flow Systems.
National Bureau of Standards, Gaithersburg, MD
Symposium on Turbulent Shear Flows, 4th. September 12-14, 1983, Karlsruhe, West Germany, 15/22-27 pp, 1987.
Available from National Technical Information Services
PB86-200375

McCormack, J. A.
Damant, G. H., McCormack, J. A. and Claire, B.
Tests of Smoldering Ignition of Chairs and Reduced-Scale Mock-Ups by Various Cigarettes. Volume 7.
Bureau of Home Furnishings, North Highlands, CA
Technical Study Group Cigarette Safety Act of 1984
79 P. October 1987.
Available from Consumer Product Safety Commission

McGibeny, M. D.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

McGuire, A.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Megaridis, C. M.
Megaridis, C. M.
Thermophoretic Sampling and Soot Aerosol Dynamics of an Ethene Diffusion Flames.
Brown Univ., Providence, RI
NBS-GCR-87-532, 210 P. December 1987.
Available from National Technical Information Services
PB88-164041

Meng, W. H.
di Marzo, M., Wang, Z. Y. and Meng, W. H.
Transient Cooling of a Hot Surface by Droplets Evaporation. Final Report.
Maryland Univ., College Park
NBS-GCR-87-534 and Report 87-11, 77 P. November 1987.
Available from National Technical Information Services
PB88-153341

Milke, J. A.
Milke, J. A. and Bryan, J. L.
Development of Cost Effective Techniques for Alleviating Water Supply Deficiencies in a Residential Sprinkler System.
Maryland Univ., College Park
NBS-GCR-87-533, 75 P. November 1987.
Available from National Technical Information Services
PB88-155825

Miller, J. H.

Miller, J. H.
Chemical Pathways to Soot Formation in Diffusion Flames.
Annual Report. June 1, 1986-July 31, 1987.
George Washington Univ., Washington, DC
8 P. 1987.

Santoro, R. J. and Miller, J. H.
Soot Particle Formation in Laminar Diffusion Flames.
National Bureau of Standards, Gaithersburg, MD
Langmuir, Vol. 3, No. 2, 244-254, March/April 1987.
Colloid and Surface Science Symposium, 60th. Fine Particles: High Temperature Synthesis. June 15-18, 1986, Atlanta, GA, 1987.

Smyth, K. C. and Miller, J. H.
Chemistry of Molecular Growth Processes in Flames.
National Bureau of Standards, Gaithersburg, MD
George Washington Univ., Washington, DC
Science, Vol. 236, No. 4808, 1540-1546, June 1987.

Mitler, H. E.

Cooper, L. Y., Rockett, J. A., Mitler, H. E. and Stroup, D. W.
Program for the Development of a Benchmark Compartment Fire Model Computer Code.
National Bureau of Standards, Gaithersburg, MD
American Society for Testing and Materials. Mathematical Modeling of Fires. December 3, 1986, New Orleans, LA.
ASTM, Philadelphia, PA, ASTM STP 983, Mehaffey, J. R., Editor, 116-127 pp, 1987.
NBSIR 85-3252, 29 P. October 1985.
Available from National Technical Information Services
PB86-166592

Gann, R. G., Harris, R. H., Jr., Krasny, J. F., Levine, R. S., Mitler, H. E. and Ohlemiller, T. J.
Effect of Cigarette Characteristics on the Ignition of Soft Furnishings. Volume 3. Technical Study Group Cigarette Safety Act of 1984.
National Bureau of Standards, Gaithersburg, MD
NBS TN 1241, 251 P. October 1987.
Available from Government Printing Office

Mitler, H. E.
Algoritm for the Mass-Loss Rate of Burning Wall.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3682, 26 P. December 1987.
Available from National Technical Information Services
PB88-153812

Mitler, H. E. and Davis, W. D.
Computer Model of a Smoldering Cigarette.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern Section Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 4 P. 1987.

Mitler, H. E. and Rockett, J. A.
Users' Guide to FIRST, A Comprehensive Single-Room Fire Model.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3595, 138 P. September 1987.
Available from National Technical Information Services
PB88-111810

Morehart, J.
Evans, D. D. and Morehart, J.
Investigation of the Effects of a Stratified Two Layer Environment on Fire Plume Temperatures.
National Bureau of Standards, Gaithersburg, MD
California Institute of Technology, Pasadena, CA
American Society of Mechanical Engineers and Japan Society of Mechanical Engineers. Proceedings of the 1987 ASME-JSME Thermal Engineering Joint Conference. Volume 1. March 22-27, 1987, Honolulu, HI. American Society of Mechanical Engineers, New York, Marto, P. J. and Tanasawa, I., Editors, 381-386 pp, 1987.

Toner, S. J., Morehart, J., Kubota, T. and Zukoski, E. E.
Species Formation in Two-Layer Fire Plumes.
California Institute of Technology, Pasadena
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 108/1-4 pp, 1987.

Morita, M.
Rockett, J. A., Morita, M. and Cooper, L. Y.
Comparisons of NBS/Harvard VI Simulations and Full-Scale, Multi-Room Fire Test Data.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3567, 66 P. July 1987.
Available National Technical Information Services

Motevalli, V.
Marks, C. H. and Motevalli, V.
Transient Characteristics of Unconfined Fire-Plume-Driven Ceiling Jets. Annual Report. 1985-1986.
Maryland Univ., College Park
NBS-GCR-87-529, 114 P. April 1987.
Available from National Technical Information Services
PB87-201810

Motevalli, V., Marks, C. H. and McCaffrey, B. J.
Measurement of Velocity and Temperature Profiles in Low-Speed, Turbulent Non-Isothermal Flows.
Maryland Univ., College Park
Maryland Univ., Catonsville
NBS-GCR-87-535, 21 P. November 1987.
Available from National Technical Information Services
PB88-155833

Motevalli, V., Marks, C. H., McCaffrey, B. J. and Cooper, L. Y.
Transient Ceiling Jet Characteristics.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 5 P. 1987.

Mulholland, G. W.
Babrauskas, V. and Mulholland, G. W.
Smoke and Soot Data Determinations in the Cone Calorimeter.
National Bureau of Standards, Gaithersburg, MD
American Society for Testing and Materials. Mathematical Modeling of Fires. December 3, 1986, New Orleans, LA.
Am. Soc. for Testing and Materials, PA, ASTM STP 983, Mehaffey, J. R., Editor, 83-104 pp, 1987.

Evans, D. D., Baum, H. W., McCaffrey, B. J., Mulholland, G. W., Harkleroad, M. F. and Manders, W. F.
Combustion of Oil on Water.
National Bureau of Standards, Gaithersburg, MD
Available from National Technical Information Services
NBSIR 86-3420, 55 P. November 1987.

Mulholland, G. W., Henzel, V. and Babrauskas, V.
Effect of Radiant Flux on Smoke Emission.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 11 P. 1987.

Samson, R. J., Mulholland, G. W. and Gentry, J. W.
Structural Analysis of Soot Agglomerates.
National Bureau of Standards, Gaithersburg, MD
Maryland Univ., College Park
Langmuir, Vol. 3, No. 2, 272-281, 1987.
Fine Particles: High Temperature Synthesis. June 15-18, 1986, Atlanta, GA, 1987.

Nelson, H. E.

Nelson, H. E.
Concepts for Life Safety Analysis.
National Bureau of Standards, Gaithersburg, MD
Fire Safety Journal, Vol. 12, No. 3, 167-177, December 1987.
Society of Fire Protection Engineers. Quantitative Methods for Life Safety Analysis. Symposium. March 5-7, 1986, College Park, MD, 22 P. 1987.

Nelson, H. E.
Engineering Analysis of the Early Stages of Fire Development--The Fire at the Dupont Plaza Hotel and Casino--December 31, 1986.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3560 and CIB W14/88/14 (USA), 113 P. May 1987.
Available from National Technical Information Services PB87-201828

Nelson, H. E.
Engineering Fire Protection Design Assessment System.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 13 P. 1987.

Nyden, M. R.
Nyden, M. R. and Babrauskas, V.
Use of FTIR Spectroscopy for Multi-Component Quantitation in Combustion Toxicology.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern States Section and National Bureau of Standards Center for Fire Research Annual Conference, Annual Conference on Fire Research, November 1-4, 1987, Gaithersburg, MD. 4 P. 1987.

Ohlemiller, T. J.
Gann, R. G., Harris, R. H., Jr., Krasny, J. F., Levine, R. S., Mitler, H. E. and Ohlemiller, T. J.
Effect of Cigarette Characteristics on the Ignition of Soft Furnishings. Volume 3. Technical Study Group Cigarette Safety Act of 1984.
National Bureau of Standards, Gaithersburg, MD
NBS TN 1241, 251 P. October 1987.
Available from Government Printing Office

Kashiwagi, T., Ohlemiller, T. J. and Atreya, A.
Effects of External Radiant Flux and Ambient Oxygen Concentration on Gasification Rates and Evolved Products of White Pine.
National Bureau of Standards, Gaithersburg, MD
UJNR Panel on Fire Research and Safety. 8th Joint Panel Meeting. May 13-21, 1985, Tsukuba, Japan, 1987.

Kashiwagi, T., Ohlemiller, T. J. and Werner, K.
Effects of External Radiant Flux and Ambient Oxygen Concentration on Nonflaming Gasification Rates and Evolved Products of White Pine.
National Bureau of Standards, Gaithersburg, MD
Combustion and Flame, Vol. 69, No. 3, 331-345, September 1987.

Ohlemiller, T. J.
Forced Smolder Propagation in a Horizontal Fuel Layer and the Transition to Flaming Combustion.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Canadian and Western States Section. Spring Meeting. April 27-30, 1986. Banff, Alberta, Canada, 4 P.
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. Norwood, MA. May 4-8, 1987, 11 P. 1987.

Ohlemiller, T. J., Kashiwagi, T. and Werner, K.
Wood Gasification at Fire Level Heat Fluxes.
National Bureau of Standards, Gaithersburg, MD
Combustion and Flame, Vol. 69, No. 2, 155-170, 1987.

Oster, G.
Sumner, D. A., Greenberg, D., Lago, A. M., Shannon, J. A., Oster, G., Ford, G. T., Brown, J. P. and Calfee, J. E.
Economic Sector Data for Modeling the Impact of Less Ignition-Prone Cigarettes. Volume 6.
North Carolina State Univ., Raleigh
National Center for Food and Agricultural Policy Resources for the Future
Technical Study Group Cigarette Safety Act of 1984
154 P. October 1987.
Available from Consumer Product Safety Commission

Paabo, M.
Braun, E., Levin, B. C., Paabo, M., Gurman, J. L., Holt, T. and Steel, J. S.
Comparison of Toxic Smoke From Large-Scale Room Burns and Small-Scale Laboratory Experiments. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 804, February 1987.

Braun, E., Levin, B. C., Paabo, M., Gurman, J. L., Holt, T. and Steel, J. S.
Fire Toxicity Scaling.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3510, 196 P. February 1987.
Available from National Technical Information Services
PB87-172276

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Different Time Exposures to the Fire Gases: Carbon Monoxide or Hydrogen Cyanide or to Carbon Monoxide Combined With Hydrogen Cyanide or Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 16 P. 1987.

Levin, B. C., Gurman, J. L., Paabo, M., Baier, L. and Holt, T.
Toxicological Effects of Pure and Mixed Fire Gases for Various Exposure Times. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 803, February 1987.

Levin, B. C., Gurman, J. L., Paabo, M., Clark, H. M. and Yoklavich, M. F.
Reduction of HCN and the Acute Inhalation Toxicity of Combustion Products by Copper Additives. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 568, February 1987.

Levin, B. C., Paabo, M., Gurman, J. L. and Harris, S. E.
Effects of Exposure to Single or Multiple Combinations of the Predominant Toxic Gases and Low Oxygen Atmospheres Produced in Fires.
National Bureau of Standards, Gaithersburg, MD
American Iron and Steel Inst., Washington, DC
Pittsburgh School of Public Health Univ., PA
Fundamental and Applied Toxicology, Vol. 9, No. 2, 236-250, August 1987.

Levin, B. C., Paabo, M., Gurman, J. L., Harris, S. E. and Braun, E.
Toxicological Interactions Between Carbon Monoxide and Carbon Dioxide.
National Bureau of Standards, Gaithersburg, MD
Toxicology, Vol. 47, 135-164, 1987.
Air Force Aerospace Medical Research Laboratory. 16th Conference of Toxicology. October 29-30, 1986, Dayton, OH. Paper No. 15, 30 P. 1987.

Paabo, M. and Levin, B. C.
Literature Review of the Chemical Nature and Toxicity of the Decomposition Products of Polyethylenes.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 2, 55-70, June 1987.
NBSIR 85-3268, 68 P. January 1986.
Available from National Technical Information Services PB86-163409

Paabo, M. and Levin, B. C.
Review of the Literature on the Gaseous Products and Toxicity Generated From the Pyrolysis and Combustion of Rigid Polyurethane Foams.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 1, 1-29, March 1987.
NBSIR 85-3224, 113 P. December 1985.
Available from National Technical Information Services PB86-151941

Parker, W. J.
Babrauskas, V. and Parker, W. J.
Ignitability Measurements With the Cone Calorimeter.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 11, No. 1, 31-43, March 1987.
NBSIR 86-3445, 49 P. September 1986.
Available from National Technical Information Services
PB87-123196

Parker, W. J.
Determination of the Input Data for a Model of the Heat Release Rate of Wood.
National Bureau of Standards, Gaithersburg, MD
American Society for Testing and Materials. Mathematical Modeling of Fires. December 3, 1986, New Orleans, LA.
ASTM, Philadelphia, PA, ASTM STP 983, Mehaffey, J. R., Editor, 105-115 PP, 1987.

Parker, W. J.
Determination of the Kinetic Parameters and the Heat of Combustion of the Volatiles for Wood.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 10 P. 1987.

Peacock, R. D.
Peacock, R. D.
Thermal Performance of Masonry Chimneys and Fireplaces.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3515, 175 P. April 1987.
Available from National Technical Information Services
PB87-199956

Peacock, R. D.
Wood Heating Safety Research: An Update.
National Bureau of Standards, Gaithersburg, MD
Fire Technology, Vol. 23, No. 4, 292-312, November 1987.

Peacock, R. D. and Dipert, R. A.
STOVE: A Predictive Model for Heat Transfer From Solid-Fuel Appliances.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3300, 66 P. February 1987.
Available from National Technical Information Services
PB87-171492

Piet, O.
Lin, T. D., Ellingwood, B. and Piet, O.
Flexural and Shear Behavior of Reinforced Concrete Beams During Fire Tests.
Portland Cement Assoc., Skokie, IL
NBS-GCR-87-536 and CIB W14/88/4 (USA), 104 P. November 1987.
Available from National Technical Information Services PB88-155817

Pitts, W. M.
Pitts, W. M.
Effects of Global Density and Reynolds Number Variations on Mixing in Turbulent, Axisymmetric Jets--Implications for Turbulent Jet Diffusion Flames.
National Bureau of Standards, Gaithersburg, MD
American Society of Mechanical Engineers. 1987 ASME/JSME Thermal Engineering Joint Conference. Volume 1. March 22-26, 1987, Honolulu, HI. ASME, New York, Marto, P. J. and Tanasawa, I., Editor, Book 10219A, 123-135 pp, 1987.

Pitts, W. M. and Kashiwagi, T.
Mixing in Variable Density, Isothermal Turbulent Flow and Implications for Chemically Reacting Turbulent Flows.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3550, 73 P. June 1987.
Available from National Technical Information Services PB88-110044

Pitts, W. M., McCaffrey, B. J. and Kashiwagi, T.
New Diagnostic Technique for Simultaneous, Time-Resolved Measurements of Concentration and Velocity in Simple Turbulent Flow Systems.
National Bureau of Standards, Gaithersburg, MD
Symposium on Turbulent Shear Flows, 4th. September 12-14, 1983, Karlsruhe, West Germany, 15/22-27 pp, 1987.
Available from National Technical Information Services PB86-200375

Poel, W. H.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Press, E.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
October 1987. 45 P.
Available from Consumer Product Safety Commission

Quintiere, J. G.
Quintiere, J. G.
Analytical Methods for Fire Safety Design.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3675 and CIB W14/88/12 (USA), 36 P. November 1987.
Available from National Technical Information Services
PB88-153333

Steckler, K. D., Baum, H.R. and Quintiere, J. G.
Salt Water Modeling of Fire Induced Flows in Multicompartment Enclosures.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute Symposium (International) on Combustion, 21st. August 3-8, 1986, Munich, West Germany, 1987.
NBSIR 86-3327 and CIB W14/88/13 (USA), 52 P. March 1986.
Available from National Technical Information Services
PB86-196417

Rebert, C. S.
Rebert, C. S.
Neurobehavioral Incapacitation of Rats Following Exposure to Carbon Monoxide and Carbon Dioxide. Final Report. September 15, 1986-September 14, 1987.
SRI International, Menlo Park, CA
SRI Project LSU-2602, 57 P. October 15, 1987.

Rehm, R. G.
Baum, H. R. and Rehm, R.G.
Transient Combustion in a Turbulent Fire.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 12 P. 1987.

Rehm, R. G., Baum, H. R. and Lozier, D. W.
Diffusion-Controlled Reaction in a Vortex Field.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3572, 40 P. June 1987.
Available from National Technical Information Services

Rinkinen, W. J.
Kokkala, M. A. and Rinkinen, W. J.
Some Observations on the Shape of Impinging Diffusion Flames.
Technical Research Center of Finland, Espoo
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3505 and VTT Research Report 461, 24 P. January 1987.
Available from National Technical Information Services

Rockett, J. A.
Cooper, L. Y., Rockett, J. A., Mitler, H. E. and Stroup, D. W.
Program for the Development of a Benchmark Compartment Fire Model Computer Code.
National Bureau of Standards, Gaithersburg, MD
American Society for Testing and Materials. Mathematical Modeling of Fires. December 3, 1986,
New Orleans, LA. ASTM, Philadelphia, PA, ASTM STP 983, Mehaffey, J. R., Editor, 116-127 pp, 1987.
NBSIR 85-3252, 29 P. October 1985.
Available from National Technical Information Services
PB86-166592

Mitler, H. E. and Rockett, J. A.
Users' Guide to FIRST, A Comprehensive Single-Room Fire Model.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3595, 138 P. September 1987.
Available from National Technical Information Services
PB88-111810

Rockett, J. A., Morita, M. and Cooper, L. Y.
Comparisons of NBS/Harvard VI Simulations and Full-Scale, Multi-Room Fire Test Data.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3567, 66 P. July 1987.
Available from National Technical Information Services

Rosasco, G. J.
Smyth, K. C., Rosasco, G. J. and Hurst, W. S.
Measurement and Rate Law Analysis of D2-Q-Branch Line Broadening Coefficients for Collisions with D2, He, Ar, H2, and CH4.
National Bureau of Standards, Gaithersburg, MD
Journal of Chemical Physics, Vol. 87, No. 2, 1001-1011, July 15, 1987.

Ruegg, R. T.
Ruegg, R. T., Weber, S. F., Lippiatt, B. C. and Fuller, S. K.
Improving the Fire Safety of Cigarettes: An Economic Impact Analysis. Volume 4.
National Bureau of Standards, Gaithersburg, MD
Technical Study Group Cigarette Safety Act of 1984
97 P. October 1987.
Available from Consumer Product Safety Commission

Rutkowski, J. V.
Rutkowski, J. B. and Levin, B. C.
Acrylonitrile-Butadiene-Styrene Copolymers (ABS): Pyrolysis and Combustion Products and Their Toxicity--A Review of the Literature.
National Bureau of Standards, Gaithersburg, MD
Fire and Materials, Vol. 10, No. 3-4, 93-105, September-December 1986.
NBSIR 85-3248, 59 P. December 1985.
Available from National Technical Information Services

Samson, R. J.
Samson, R. J., Mulholland, G. W. and Gentry, J. W.
Structural Analysis of Soot Agglomerates.
National Bureau of Standards, Gaithersburg, MD
Maryland Univ., College Park
Langmuir, Vol. 3, No. 2, 272-281, 1987.
Fine Particles: High Temperature Synthesis. June 15-18, 1986, Atlanta, GA, 1987.

Santoro, R. J.
Santoro, R. J. and Miller, J. H.
Soot Particle Formation in Laminar Diffusion Flames.
National Bureau of Standards, Gaithersburg, MD
Langmuir, Vol. 3, No. 2, 244-254, March/April 1987.
Colloid and Surface Science Symposium, 60th. Fine Particles: High Temperature Synthesis. June 15-18, 1986, Atlanta, GA, 1987.

Santoro, R. J., Yeh, T. T., Horvath, J. J. and Semerjian, H. G.
Transport and Growth of Soot Particles in Laminar Diffusion Flames.
National Bureau of Standards, Gaithersburg, MD
Combustion Science and Technology, Vol. 51, No. 1-3, 89-115, 1987.

Semerjian, H. G.
Santoro, R. J., Yeh, T. T., Horvath, J. J. and Semerjian, H. G.
Transport and Growth of Soot Particles in Laminar Diffusion Flames.
National Bureau of Standards, Gaithersburg, MD
Combustion Science and Technology, Vol. 51, No. 1-3, 89-115, 1987.

Shannon, J. A.
Sumner, D. A., Greenberg, D., Lago, A. M., Shannon, J. A., Oster, G., Ford, G. T., Brown, J. P. and Calfee, J. E.
Economic Sector Data for Modeling the Impact of Less Ignition-Prone Cigarettes. Volume 6.
North Carolina State Univ., Raleigh
National Center for Food and Agricultural Policy Resources for the Future
Technical Study Group Cigarette Safety Act of 1984
154 P. October 1987.
Available from Consumer Product Safety Commission

Shibe, A J.
Shibe, A. J.
Development of a Fire Evaluation System for Underground Coal Mines.
National Bureau of Standards, Gaithersburg, MD
NBSIR 86-3425 and BuMines OFR 35-87, 146 P. April 1987.
Available from National Technical Information Services
PB87-103271

Smith, R. L.
Smith, R. L.
ASKBUDJr: A Precursor of an Expert System for the Evaluation of Fire Hazard.
National Bureau of Standards, Gaithersburg, MD
Fire Technology, Vol. 23, No. 1, 5-18, February 1987.

Smyth, K. C.
Smyth, K. C. and Miller, J. H.
Chemistry of Molecular Growth Processes in Flames.
National Bureau of Standards, Gaithersburg, MD
George Washington Univ., Washington, DC
Science, Vol. 236, No. 4808, 1540-1546, June 1987.

Smyth, K. C., Rosasco, G. J. and Hurst, W. S.
Measurement and Rate Law Analysis of D2-Q-Branch Line Broadening Coefficients for Collisions with D2, He, Ar, H2, and CH4.
National Bureau of Standards, Gaithersburg, MD
Journal of Chemical Physics, Vol. 87, No. 2, 1001-1011, July 15, 1987.

Snell, J. E.
Snell, J. E.
On Hotel Fire Safety: What's Needed to Protect Our Citizens? Statement Before the House Committee on Science, Space, and Technology Subcommittee on Science, Research and Technology.
National Bureau of Standards, Gaithersburg, MD
21 P. March 5, 1987.

Snell, J. E.
Measuring Hazards of Products of Combustion From Electrical Systems.
National Bureau of Standards, Gaithersburg, MD
Fire Journal, Vol. 81, No. 5, 108-109, September/October 1987.

Spears, A. W.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Stacy, H. W.
Hartzell, G. E., Grand, A. F., Kaplan, H. L., Stacy, H. W. and Switzer, W. G.
Analysis of Hazards to Life Safety in Fires: A Comprehensive Multi-Dimensional Research Program. Year 2. Final Report.
Southwest Research Inst., San Antonio, TX
SWRI Project 01-1257, 38 P. March 1987.

Starnes, W. H., Jr.
Starnes, W. H., Jr.
Mechanisms of Action of Metallic Smoke Suppressants and Fire Retardants for Poly(Vinyl Chloride). Final Report.
Polytechnic Univ., Brooklyn, NY
8 P. 1987.

Steckler, K. D.
Steckler, K. D., Baum, H.R. and Quintiere, J. G.
Salt Water Modeling of Fire Induced Flows in Multicompartment Enclosures.
National Bureau of Standards, Gaithersburg, MD
Combustion Institute Symposium (International) on Combustion, 21st. August 3-8, 1986, Munich, West Germany, 1987.
NBSIR 86-3327 and CIB W14/88/13 (USA), 52 P. March 1986.
Available from National Technical Information Sèrvices
PB86-196417

Steel, J. S.
Braun, E., Levin, B. C., Paabo, M., Gurman, J. L. Holt, T. and Steel, J. S.
Comparison of Toxic Smoke From Large-Scale Room Burns and Small-Scale Laboratory Experiments. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstracts 804, February 1987.

Braun, E., Levin, B. C., Paabo, M., Gurman, J. L., Holt, T. and Steel, J. S.
Fire Toxicity Scaling.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3510, 196 P. February 1987.
Available from National Technical Information Services
PB87-172276

Stock, M. F.
Kennah, H. E., II, Stock, M. F. and Alarie, Y.
Toxicity of Thermal Decomposition Products From Composites.
Pittsburgh Univ., PA
Journal of Fire Sciences, Vol. 5, No. 1, 3-16,
January/February 1987.

Malek, D. E., Stock, M. F. and Alarie, Y.
Performance Evaluation Under Intoxicating Atmospheres.
Pittsburgh Univ., PA
Fundamental and Applied Toxicology, Vol. 8, 335-345, 1987.

Stroup, D. W.
Cooper, L. Y., Rockett, J. A., Mitler, H. E. and Stroup, D. W.
Program for the Development of a Benchmark Compartment Fire Model Computer Code.
National Bureau of Standards, Gaithersburg, MD
American Society for Testing and Materials. Mathematical Modeling of Fires. December 3, 1986, New Orleans, LA.
ASTM, Philadelphia, PA, Mehaffey, J. R., Editor,
ASTM STP 983, 116-127 pp, 1987.
NBSIR 85-3252, 29 P. October 1985.
Available from National Technical Information Services
PB86-166592

Cooper, L. Y. and Stroup, D. W.
Test Results and Predictions for the Response of Near-Ceiling Sprinkler Links in a Full-Scale Compartment Fire.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3633, 45 P. September 1987.
Available from National Technical Information Services
PB88-113741

Cooper, L. Y. and Stroup, D. W.
Thermal Response of Unconfined Ceilings Above Growing Fires and the Importance of Convective Heat Transfer.
National Bureau of Standards, Gaithersburg, MD
Journal of Heat Transfer, Vol. 109, No. 1, 172-178,
February 1987.
NBSIR 84-2856, 36 P. April 1984.
Available from National Technical Information Services
PB84-216548

Stroup, D. W.
Catalog of Compartment Fire Model Algorithms and Associated Computer Subroutines.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3607, 235 P. August 1987.
Available from National Technical Information Services
PB88-110861

Sumner, D. A.
Sumner, D. A., Greenberg, D., Lago, A. M., Shannon, J. A., Oster, G., Ford, G. T., Brown, J. P. and Calfee, J. E.
Economic Sector Data for Modeling the Impact of Less Ignition-Prone Cigarettes. Volume 6.
North Carolina State Univ., Raleigh
National Center for Food and Agricultural Policy Resources for the Future
Technical Study Group Cigarette Safety Act of 1984
154 P. October 1987.
Available from Consumer Product Safety Commission

Switzer, W. G.
Hartzell, G. E., Grand, A. F., Kaplan, H. L., Stacy, H. W. and Switzer, W. G.
Analysis of Hazards to Life Safety in Fires: A Comprehensive Multi-Dimensional Research Program. Year 2. Final Report.
Southwest Research Inst., San Antonio, TX
SWRI Project 01-1257, 38 P. March 1987.

Hartzell, G. E., Grand, A. F. and Switzer, W. G.
Studies on the Toxicity of Smoke Containing Hydrogen Chloride.
Southwest Research Inst., San Antonio, TX
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 10 P. 1987.

Tewarson, A.
Tewarson, A.
Correlation for the Generation of Carbon Monoxide in Small- and Large-Scale Fires.
Factory Mutual Research Corp., Norwood, MA
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 11 P. 1987.

Tien, C. L.
Brosmer, M. A. and Tien, C. L.
Radiative Energy Blockage in Large Pool Fires.
California Univ., Berkeley
Combustion Science and Technology, Vol. 51, No. 1-3, 21-37, 1987.

Toner, S. J.
Toner, S. J., Morehart, J., Kubota, T. and Zukoski, E. E.
Species Formation in Two-Layer Fire Plumes.
California Institute of Technology, Pasadena
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 108/1-4 pp, 1987.

Toner, S. J., Zukoski, E. E. and Kubota, T.
Entrainment, Chemistry, and Structure of Fire Plumes.
California Institute of Technology, Pasadena, CA
NBS-GCR-87-528, 222 P. April 1987.
Available from National Technical Information Services
PB87-201851

Tovey, H.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Townsend, D. E.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Trehan, A. K.
di Marzo, M., Trehan, A. K. and Evans, D. D.
Cooling Effect of a Single Evaporating Droplet on a Hot Semi-Infinite Metal Body.
National Bureau of Standards, Gaithersburg, MD
NBSIR 87-3517, 29 P. April 1987.
Available from National Technical Information Services
PB87-201802

Walton, W. D.
Evans, D. D. and Walton, W. D. and McCaffrey, B. J.
Progress in Modeling Sprinkler Performance.
National Bureau of Standards, Gaithersburg, MD
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 11 P. 1987.

Wang, Z. Y.
di Marzo, M., Wang, Z. Y. and Meng, W. H.
Transient Cooling of a Hot Surface by Droplets Evaporation.
Final Report.
Maryland Univ., College Park
NBS-GCR-87-534 and Report 87-11, 77 P. November 1987.
Available from National Technical Information Services
PB88-153341

Weber, S. F.
Ruegg, R. T., Weber, S. F., Lippiatt, B. C. and Fuller, S. K.
Improving the Fire Safety of Cigarettes: An Economic Impact Analysis. Volume 4.
National Bureau of Standards, Gaithersburg, MD
Technical Study Group Cigarette Safety Act of 1984
97 P. October 1987.
Available from Consumer Product Safety Commission

Werner, K.
Kashiwagi, T., Ohlemiller, T. J. and Werner, K.
Effects of External Radiant Flux and Ambient Oxygen Concentration on Nonflaming Gasification Rates and Evolved Products of White Pine.
National Bureau of Standards, Gaithersburg, MD
Combustion and Flame, Vol. 69, No. 3, 331-345, September 1987.

Ohlemiller, T. J., Kashiwagi, T. and Werner, K.
Wood Gasification at Fire Level Heat Fluxes.
National Bureau of Standards, Gaithersburg, MD
Combustion and Flame, Vol. 69, No. 2, 155-170, 1987.

Wichman, I. S.
Atreya, A. and Wichman, I. S.
Heat and Mass Transfer During Piloted Ignition of Cellulosic Solids.
Michigan State Univ., East Lansing
American Society of Mechanical Engineers and Japan Society of Mechanical Engineers. Proceedings of the 1987 ASME-JSME Thermal Engineering Joint Conference. Volume 1. March 22-27, 1987, Honolulu, HI. American Society of Mechanical Engineers, New York, Marto, P. J. and Tanasawa, I., Editors, 433-440 pp, 1987.

Wichman, I. S. and Atreya, A.
Simplified Model for the Pyrolysis of Charring Materials..
National Bureau of Standards, Gaithersburg, MD
Michigan State Univ., East Lansing
Combustion and Flame, Vol. 68, No. 3, 231-247, June 1987.

Wilkenfeld, J.
Gann, R. G., Press, E., Carey, C. M., Charles, J. L., Cullen, J. W., Gerard, J. C., Hoebel, J. F., Leake, P. H., McGibeny, M. D., McGuire, A., Poel, W. H., Spears, A. W., Tovey, H., Townsend, D. E. and Wilkenfeld, J.
Toward a Less Fire-Prone Cigarette. Final Report of the Technical Study Group on Cigarette and Little Cigar Fire Safety.
Technical Study Group Cigarette Safety Act of 1984
45 P. October 1987.
Available from Consumer Product Safety Commission

Woodhouse, A.
Woodhouse, A., Marks, C. H. and Cooper, L. Y.
Experimental Study of the Transient Thermal Response of Unconfined Ceilings Above Fire Plumes.
Maryland Univ., College Park
National Bureau of Standards, Gaithersburg, MD
Combustion Institute/Eastern States Section. Chemical and Physical Processes in Combustion. Fall Technical Meeting. November 4-6, 1985, Philadelphia, PA. 41/1-4 pp. 1985.
ASME-JSME Thermal Engineering Conference, 1987.
March 22-27, 1987, Honolulu, HI. Sessions on Heat and Mass Transfer organized and edited by Cooper, L. Y. and Farouk, B. Proceedings. 287-394 pp, 1987.

Yeh, T. T.
Santoro, R. J., Yeh, T. T., Horvath, J. J. and Semerjian, H. G.
Transport and Growth of Soot Particles in Laminar Diffusion Flames.
National Bureau of Standards, Gaithersburg, MD
Combustion Science and Technology, Vol. 51, No. 1-3, 89-115, 1987.

Yoklavich, M. F.
Levin, B. C., Gurman, J. L., Paabo, M., Clark, H. M. and Yoklavich, M. F.
Reduction of HCN and the Acute Inhalation Toxicity of Combustion Products by Copper Additives. (Abstract Only)
National Bureau of Standards, Gaithersburg, MD
Society of Toxicology. The Toxicologist. Abstracts of the 26th Annual Meeting. Volume 7, Number 1, Abstract 568, February 1987.

Zukoski, E. E.
Toner, S. J., Morehart, J., Kubota, T. and Zukoski, E. E.
Species Formation in Two-Layer Fire Plumes.
California Institute of Technology, Pasadena
Combustion Institute/Eastern Section. Fall Technical Meeting and National Bureau of Standards Annual Conference on Fire Research. November 2-6, 1987, Gaithersburg, MD, 108/1-4 pp, 1987.

Toner, S. J., Zukoski, E. E. and Kubota, T.
Entrainment, Chemistry, and Structure of Fire Plumes.
California Institute of Technology, Pasadena, CA
NBS-GCR-87-528, 222 P. April 1987.
Available from National Technical Information Services
PB87-201851

Zukoski, E. E.
Distribution of Soot in Large Buoyant Diffusion Flames.
California Inst. of Technology, Pasadena, CA
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 9th Joint Panel Meeting of the UJNR Panel. May 4-8, 1987, Norwood, MA, 2 P. 1987.

Zukoski, E. E.
Heat Transfer in Unwanted Fires.
California Institute of Technology, Pasadena
CIB W14/88/20 (USA),
ASME-JSME Thermal Engineering Conference. March 22-27, 1987, Honolulu, HI. Proceedings of Sessions on Heat and Mass Transfer in Compartment Fires, 1987.

REPORT NUMBER INDEX

NASA CP-2476
Babrauskas, V.
Bukowski, R. W.
Marks, C. H.
McCaffrey, B. J.
Motevalli, V.

NBS-GCR-87-524
Flynn, J. H.
Levin, D. M.

NBS-GCR-87-525
Kulkarni, A. K.
Hwang, J. J.
Chou, S. L.

NBS-GCR-87-526
Ang, J. A.

NBS-GCR-528
Toner, S. J.
Zukoski, E. E.
Kubota, T.

NBS-GCR-87-529
Marks, C. H.
Motevalli, V.

NBS-GCR-87-532
Megaridis, C. M.

NBS-GCR-87-533
Milke, J. A.
Bryan, J. L.

NBS-GCR-87-534
di Marzo, M.
Wang, Z. Y.
Meng, W. H.

NBS-GCR-87-535
Motevalli, V.
Marks, C. H.
McCaffrey, B. J.

NBS-GCR-87-536
Lin, T. D.
Ellinwood, B.
Piet, O.

NBS TN 1241
Gann, R. G.
Harris, R. H., Jr.
Krasny, J. F.
Levine, R. S.
Mitler, H. E.
Ohlemiller, T. J.

NBSIR 84-2856
Cooper, L. Y.
Stroup, D. W.

NBSIR 85-3139
Braun, E.
Levin, B. C.

NBSIR 85-3224
Paabo, M.
Levin, B. C>

NBSIR 85-3248
Rutkowski, J. V.
Levin, B. C.

NBSIR 85-3252
Cooper, L. Y.
Rockett, J. A.
Mitler, H. E.
Stroup, D. W.

NBSIR 85-3267
Levin, B. C.

NBSIR 85-3268
Paabo, M.
Levin, B. C.

NBSIR 85-3277
Gurman, J. L.
Baier, L.
Levin, B. C.

NBS-114A (REV. 2-80)

U.S. DEPT. OF COMM. BIBLIOGRAPHIC DATA SHEET (See instructions)	1. PUBLICATION OR REPORT NO. NBSIR 88-3758	2. Performing Organ. Report No.	3. Publication Date April 1988

4. TITLE AND SUBTITLE

Fire Research Publications, 1987

5. AUTHOR(S)

Nora H. Jason

6. PERFORMING ORGANIZATION (If joint or other than NBS, see instructions)

NATIONAL BUREAU OF STANDARDS
U.S. DEPARTMENT OF COMMERCE
GAITHERSBURG, MD 20899

7. Contract/Grant No.

8. Type of Report & Period Covered

9. SPONSORING ORGANIZATION NAME AND COMPLETE ADDRESS (Street, City, State, ZIP)

10. SUPPLEMENTARY NOTES

☐ Document describes a computer program; SF-185, FIPS Software Summary, is attached.

11. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here)

"Fire Research Publications, 1987" is a supplement to previous editions; the last five editions are referenced below. Earlier edition information is available upon request.

1982	NBSIR 83-2706	PB83-239015
1983	NBSIR 84-2871	PB84-217066
1984	NBSIR 85-3153	PB85-208502
1985	NBSIR 86-3372	PB86-208317
1986	NBSIR 87-3555	PB88-109889

Only publications prepared by members of the Center for Fire Research (CFR), by other National Bureau of Standards (NBS) personnel for CFR, or by external laboratories under contract or grant from the CFR are cited.

12. KEY WORDS (Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)

bibliographies; fire research; combustion products; toxicity; plastics; cigarettes; fire models; wood

13. AVAILABILITY

☒ Unlimited

☐ For Official Distribution. Do Not Release to NTIS

☐ Order From Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

☒ Order From National Technical Information Service (NTIS), Springfield, VA. 22161

14. NO. OF PRINTED PAGES 70

15. Price $13.95

USCOMM-DC 6043-P80